WHAT IS CLAIMED IS:

1. A gelatin-based substrate for fabricating protein arrays, the substrate comprising:

--gelatin having at least one surface;

--a polymer scaffold affixed to the gelatin surface;

wherein the polymer in the scaffold is rich in reactive units capable of immobilizing proteins.

2. A gelatin-based substrate for fabricating protein arrays, the substrate comprising:

--gelatin having at least one surface;

--a polymer scaffold affixed to the gelatin surface; and

-- a trifunctional compound A-L-B;

wherein A is a functional group capable of interacting with the polymer scaffold; L is a linking group capable of interacting with A and with B; and B is a specific functionality that provides one or more reactive units capable of interacting with a protein capture agent.

3. The gelatin-based substrate of claim 1 or 2 wherein the reactive unit is aldehyde, epoxy, hydrazide, vinyl sulfone, succinimidyl ester, carbodiimide, maleimide, dithio, iodoacetyl, isocyanate, isothiocyanate, or aziridine.

4. The gelatin-based substrate of claim 2 wherein the precursor polymer is rich in thiols, amines, phosphines, alcohols, or carboxylic acids.

5. The gelatin-based substrate of claim 2 wherein the precursor polymer is rich in primary or secondary amines.

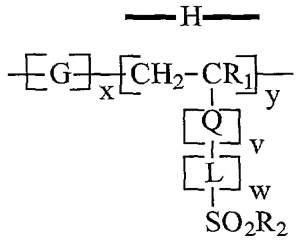
6. The gelatin-based substrate of claim 2 wherein A may be the same or different from B.

7. The gelatin-based substrate of claim 1 or 2 wherein the interaction between the gelatin and the polymer scaffold is a covalent bond.

8. The gelatin-based substrate of claim 2 wherein the interaction between the scaffold and A is a physical binding or a chemical reaction.

9. The gelatin-based substrate of claim 2 wherein the interaction between the protein capture agent and B is a physical binding or a chemical reaction.

10. The gelatin-based substrate of claim 2 wherein the polymer forming the polymer scaffold is represented by Formula I:



Formula 1

wherein $\mathbf{R}_1$ is a hydrogen atom or a C_1-C_6 alkyl group; Q is $-CO_2-$, or $CONR_1$; v is 1 or 0; w is 1-3; **L** is a divalent linking group containing at least one linkage selected from the group consisting of $-CO_2-$ and $-CONR_1$, and containing 3-15 carbon atoms, or a divalent unit containing at least one linkage selected from the group consisting of –O-, $-N(R_1)-$, -CO-, -SO-, $-SO_2-$, $-SO_3-$, $-SO_2N(R_1)-$, $-N(R_1)CON(R_1)-$ and $-N(R_1)CO_2-$, and containing 1-12 carbon atoms in which R_1 has the same meaning as defined above; R_2 is $-CH=CH_2$ or $-CH_2-CH_2X_1$ wherein X_1 is a substituent replaceable by a nucleophilic group or releasable in the form of

HX_1 by a base; X_1 is $-S_2O_3^-$, $-SO_4^-$, -Cl, -Br, -I, quaternary ammonium, pyridinium, or –CN, and sulfonate esters; x and y both represent molar percentages ranging from 10 to 90 and 90 to 10; **G** comprises repeating units of an α,β-ethylenically unsaturated addition polymerizeable monomer that imparts water-solubility to the polymer; and monomer **H** is the polymerized form of a vinylsulfone or vinylsulfone precursor unit covalently bound to a polymerizeable α,β-ethylenically unsaturated function by an organic spacer which consists of Q and L, of which Q is an optional component.

11. The gelatin-based substrate of claim 10 wherein H in the formula I contains a vinylsulfone moiety or a vinylsulfone precuror.

12. The gelatin-based substrate of claim 11 wherein H in the formula I comprises a dehydrochlorinated form of a chloroethylsulfone-containing unit.

13. The gelatin-based substrate of claim 10 wherein G in the formula I comprises repeating units of acrylamide, sodium 2-acrylamido-2-methanepropionate, sulfopropyl acrylate and methacrylate salts, or sodium styrenesulfonate.

14. The gelatin-based substrate of claim 1 or 2 wherein the polymer forming the polymer scaffold is poly(vinylamine), poly(propyleneimine), poly(N-aminopropyl methacrylamide) or poly(n-vinylimidazole).

15. The gelatin-based substrate of claim 2 wherein either A or B, or both, is aldehyde, epoxy, hydrazide, vinyl sulfone, succinimidyl ester, carbodiimide, maleimide, dithio, iodoacetyl, isocyanate, isothiocyanate, or aziridine.

16. The gelatin-based substrate of claim 2 wherein B is an affinity tag capable of interacting non-covalently with a protein capture agent.

17. The gelatin-based substrate of claim 2 wherein B is streptavidin, biotin, glutathione-S-transferase, glutathione, or histidine tags.

18. The gelatin-based substrate of claim 2 wherein L is a diradical of such a length that the shortest through–bond path between the ends that connect A to B is not greater than 10 atoms.

19. The substrate of claim 1 or 2 wherein the gelatin is alkaline pretreated.

20. The substrate of claim 1 or 2 wherein the gelatin is pig gelatin or fish gelatin.

21. The substrate of claim 1 or 2 wherein the gelatin coverage is 0.2 to 100 grams per square meter.

22. The substrate of claim 1 or 2 wherein the gelatin coverage is 10 to 50 grams per square meter.

23. The substrate of claim 2 further comprising a protein capture agent in physical or chemical interaction with B.

24. The substrate of claim 1 or 2 wherein the protein capture agent is an antibody, a protein scaffold, a peptide, a nucleic acid ligand or a molecular imprinting polymer.

25. A method of making a gelatin-based substrate for fabricating protein arrays comprising the steps of:

--providing a support;

--coating on the support a composition containing gelatin;

--bonding a polymer scaffold to a surface of the gelatin; wherein the polymer in the scaffold is rich in reactive units capable of immobilizing proteins.

26. A method of making a gelatin-based substrate for fabricating protein arrays comprising the steps of:

--providing a support;

--coating on the support a composition containing gelatin;

--affixing a polymer scaffold to a surface of the gelatin; and

--bonding a trifunctional compound A-L-B to the polymer scaffold;

wherein A is a functional group capable of bonding to the polymer scaffold; L is a linking group capable of connecting A with B; and B is a reactive unit that provides one or more reactive units capable of interacting with a protein or protein capture agent.

27. The method of claim 26 wherein the trifunctional compound ALB is affixed while coating the gelatin on the substrate.

28. The method of claim 26 wherein the trifunctional compound ALB is affixed after coating the gelatin on the substrate.

29. The method of claim 26 wherein the protein capture agent is antibody, protein scaffold, peptide, nucleic acid ligand, or a molecular imprinting polymer.